

REMARKS

Claims 1-7, 9-14, and 16-20 were pending in this application when the present Office Action was mailed on December 4, 2007. In this response, no claims have been cancelled. Claims 1, 3, 7, 11, 12, 14, and 18 have been amended. Claims 21-26 have been added. Accordingly, claims 1-7, 9-14, and 16-26 are pending.

In the Non-Final Office Action mailed on October 9, 2007, the Examiner rejected the above-mentioned pending claims under 35 U.S.C. § 103. For the reasons set forth in detail below, applicants submit that the present application, including each of pending claims, is in condition for allowance.

Objection to Claim 7

Claim 7 was objected to because of an informality resulting from a drafting error. Applicant has amended claim 7 to correct the error. Accordingly, the objection should be withdrawn.

Overview

Current optical disk formats, including DVD, store data about the memory format of the disk in a separate signal called the wobble signal. See Hsiao, para. 0005. Because the wobble signal is recorded using phase modulation, disk drives must correct phase delay introduced when processing the wobble signal and the clock signal generated from the wobble signal. See Hsiao, para. 0006. Therefore, some of the pending claims are directed to, *inter alia*, a system for synchronizing the phase of an input wobble clock signal with a target clock signal. Applicant's technology uses a phase frequency detector to detect when the input clock signal precedes or lags the target clock signal. See Hsiao, para. 0030. The detector raises an UP signal if the input clock precedes the target and a second DOWN signal if the input clock lags the target. See Hsiao, para. 0030. Applicant's technology also includes a counter that counts the number of cycles of a reference clock

when each signal is raised and calculates a third value based on those counts. See Hsiao, para. 0031. If the sum of these calculated values over a period of time falls outside specified range, the system generates a phase adjustment signal based on the sum. See Hsiao, para. 0033.

Rejection under 35 U.S.C. § 103

Claims 1, 4, 7, 11, 13-14, 18, and 20 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,754,147 to Hsu et al. ("Hsu") in view of U.S. Patent Application Pub. No. 2003/0081516 to Takumai et al ("Takumai") and U.S. Patent Application Pub. No. 2004/0057360 to Banno ("Banno"). For at least the reasons discussed below, applicants respectfully submit that the cited references fail to disclose all of the features of independent claim 1.

The cited references do not support a Section 103 rejection of claim 1 because the combination of Hsu, Takumai, and Banno fails to disclose several features of this claim. For example, none of Hsu, Takumai, and Banno disclose "a decision logic circuit . . . for generating a third counting value based on the first counting value and the second counting value [and] calculating the sum of a plurality of the third counting values. . . ." In particular, the phase shift detection circuit 104 in Hsu uses a different means to detect phase difference. Hsu discloses that the circuit receives the wobble signal and a reference signal. See Hsu, Figure 6. The reference signal is generated so that there are a specified number of cycles (e.g. 8) during a single cycle of the wobble signal. See Hsu, col. 7, lines 1-7. The phase detector determines the phase difference by detecting which period of the reference signal is currently being received when it detects a rising edge of the wobble signal. See Hsu, col. 7, lines 20-29. The circuit uses the period to determine the phase difference and generates a correcting signal based on that phase difference. See Hsu, col. 7, lines 36-42. Applicants respectfully submit that nothing in the description of the phase detection circuit or Hsu in general teaches or suggests "generating a third counting value" or "calculating a sum of a plurality of the third counting values."

Takumai and Banno fail to fill this gap. In fact, the system in Takumai contains only a single counter. See Takumai, para. 0075 and Figure 1. The value from the single counter is used to generate a phase difference signal. See Takumai, para. 0075. Takumai does not disclose that the result from the counter is used to generate any other counting values. Banno discloses that the phase correcting circuit performs a "predetermined masking process to each of the counted values . . . to supply the PWM output circuit 133 with one particular bit in each of the counted values as a corrected UP signal and a corrected DOWN signal." Therefore, the system in Banno uses specified bits from each counted value to generate a final signal. Thus, Takumai and Banno fail to disclose "generating a third counting value" and "calculating a sum."

The cited references also fail to disclose "setting the phase adjusting value to zero if the sum is within a specified range, and setting the phase adjusting value according to the sum if the sum is outside the specified range." In the case of Hsu, the system disclosed in the reference generates a phase adjusting signal determined by the period of the reference clock. There is no further decision logic for determining whether to generate a phase adjustment signal. In the case of Takumai and Banno, the references disclose only that the counted values are used to generate phase adjustment signals. Neither reference teaches or suggests that the counted values are compared to a specified range to determine whether to adjust the phase.

Conclusion

For at least the foregoing reasons, applicants respectfully submit that Hsu, Takumai, and Banno fail to disclose or suggest all of the features of claim 1 and therefore request that the Section 103 rejection be withdrawn. Independent claims 7 and 14 contain similar features to claim 1 and should be allowed for at least the reasons discussed above. Dependent claims 4, 11, 13-14, and 18 should also be allowed for at least these reasons and for the additional feature of these claims.

Dependent claims 2-3, 5, 9-10, and 16-17 were rejected under 35 U.S.C. § 103 over the above references in combination with U.S. Patent Application No. 2003/0067335 to Von Kaenel ("Von Kaenel"). Dependent claims 12 and 19 were rejected under 35 U.S.C. § 103 over the above references in combination with U.S. Patent No. 5,939,947 to Nakao et al ("Nakao"). As discussed above, the combination of Hsu, Takumai, and Banno fails to teach or suggest several features of independent claims 1, 7, and 14. Von Kaenel and Nakao fail to cure the deficiencies of the references. Accordingly, the Section 103 rejections of these dependent claims should be withdrawn for at least the foregoing reasons and the additional features of these dependent claims.

In view of the foregoing amendments and remarks, applicants believe the pending application is in condition for allowance. If the Examiner notices any informalities or other matters that may be expediently handled by telephone, he is encouraged to contact the undersigned attorney at (206) 359-3257.

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Respectfully submitted,

By 
Chun M. Ng
Registration No.: 42,216
PERKINS COIE LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 359-3257
(206) 359-4257 (Fax)
Attorney for Applicant